



SAVING YOUR Treasures

A Website about what you can do to protect and preserve the things of importance in your life



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CARING FOR HISTORIC OR “RETIRED” FIREARMS

The care of firearms, particularly in a home environment, is an ongoing process that requires attention to detail to ensure long-term stability. The process can be broken down into several steps. These steps include thorough examination, careful cleaning, appropriate housing, and stable, secure storage. The care information in this document was written for firearms that are **not** in use.

Examination:

Examination of an artifact usually begins with a description, noting all of the materials, both organic and inorganic, used to create it. Take note of makers' marks, serial numbers, tool marks, and any evidence of change that may have been made to the weapon over time. Carefully look over your firearm to make sure it is strong enough to withstand the amount of handling needed for these activities. Examine the structure and surface carefully, looking for cracks, weak areas, old repairs, and loose or missing parts. Make notes of your findings and take documentary photographs, either slide, print, or digital images. Be absolutely certain that the weapon is not loaded, and if you find that it is, remove the charge and/or ammunition.

Determine if there are original decorative or protective surface finishes on the surface. On firearms, these coatings tend to be clear varnish or wax coatings on the stocks and plating, patination, oils, or waxes on the barrels. Plating is a coating of one metal over another metal, and nickel, tin, or chrome plating may be found on some barrels. Less commonly found plating layers include silver and gold.

Another important type of decorative and protective surface sometimes applied to metal parts is a patina. A patina is a thin chemically induced layer of relatively stable corrosion on the surface of an object. There is a long history of patination on the surface of weapons. Patinas are typically dark blue or dark brown. Barrels can also be patinated with heat, which creates a multi-colored effect. Some people also refer to the minor corrosion that forms over time on a weapon over time from use and handling as the “patina of age”. However, in the context of this document, the term patina is used to refer only to intentionally applied surface finishes. Original surface coatings, either on the stock or the barrel should not be removed and could easily be ruined by aggressive cleaning procedures. For example, brown patination on a barrel may easily be mistaken for rust. Varnishes and waxes on stocks can be transparent and very thin, and thus, very difficult to detect with the naked eye or with a hand lens.

Make note of any corrosion you find on the surface of the weapon. Iron corrosion products

are highly expansive, disfiguring, and difficult to reduce. The cleaning procedures listed below are not appropriate for heavily corroded objects, as they are ineffective on these surfaces.

It can sometimes be difficult to determine the structural or surface condition of an object. If your piece is very special, seems fragile, appears heavily corroded, has decorative plating, inlay, or patination, please consult a conservator in order to assess all the issues relating to its care.

If you determine that your firearm is strong enough, has no evidence of original organic or inorganic surfaces, and has only minor corrosion, proceed with a cautious and gentle approach. Commercial cleaning products are generally to be avoided, as many contain corrosive chemicals such as ammonia, harsh abrasives, acids, or bases, which can permanently damage artifacts. The materials and techniques listed below have been tested and found to be safe and effective when used in a careful and sensitive manner.

Provide a clean well-ventilated work area for the cleaning process. Place a clean piece of soft muslin or other soft cotton on the table as a work surface. Wear nitrile or latex gloves to avoid contaminating both your object and yourself. Oils, salts, and acids from your skin can easily cause corrosion to metal surfaces.

Materials to Have on Hand:

- Clean cotton padding placed over a stable work surface
- Heavy polyethylene sheeting to protect the padded work surface
- Cotton swabs or pads, as needed
- Gloves: latex, nitrile, or polyethylene
- Mineral spirits
- Ultra fine (4/0) steel wool
- A penetrating lubricant that displaces moisture, such as WD 40® or CRC 3-36®
- Soft clean natural bristle brushes, such as haké, watch, or paint brushes
- Stiff natural bristle brushes and bamboo skewers, as needed
- Apron or smock to protect clothing
- Clear microcrystalline paste wax, such as Renaissance® wax, or a clear hard paste wax available in hardware stores such as Butcher's® wax or Behlens® paste wax.
- Clean natural bristle stippling or stencil brushes, or shoe buffing brushes, for waxing and buffing

Cleaning Procedures:

Remove any loose dirt or dust by brushing lightly with a soft brush or camel hair paintbrush. If brushes have metal ferrules, cover them with tape to prevent them from scratching the object. Do not use dusting cloths, as they will not get into small crevices, and can cause scratching if trapped grit is rubbed over surfaces. If the artifact has soil that is firmly attached, a stiff paintbrush or stippling brush may be needed. Vacuum away any residues, brushing the dust towards the vacuum nozzle. If possible, separate the stock from the barrel assembly. If this is not possible, mask out any non-metallic elements, with thin polyethylene wrap to protect these parts from the barrel cleaning materials.

Remove any waxy or oily accretions from the barrel by lightly brushing the area with a natural bristle brush or cotton swabs dampened with mineral spirits. Rinse the brush in a small container of mineral spirits or replace the cotton swabs as they become soiled. Clean the brush or replace the swabs regularly to avoid scratching the surface with loosened rust and accumulated grime.

To remove minor rust deposits, wet small wads of 4/0 ultra fine steel wool with the penetrating lubricant and rubbing gently. Do not use bronze, tin, or nickel wool in a mistaken attempt to reduce potential abrasion. These materials will actually leave a thin layer of copper alloy, tin, or nickel on the surface that will increase the rate of corrosion through a process called galvanic interaction. Never immerse an iron object in a bath of water, as it will begin rusting almost immediately. Old wax can be pushed off with the blunt end of a bamboo skewer or removed with mineral spirits.

Clear any residues with clean mineral spirits on swabs or brushes or clean pieces of soft cotton rags. A clean soft brush may be used to remove any remaining residues from crevices or recessed design elements. Allow the mineral spirits to completely evaporate. Finally, remove the protective wrap applied to non-metallic components.

Clean the wood and other organic parts using cotton swabs or cotton pads barely dampened with distilled or deionized water, wiping immediately with clean dry pieces of cotton to dry the surface. Before undertaking this type of cleaning, it is important to test clean in a small, inconspicuous area to be sure that the water will not cause the surface finish to blanch or discolor.

Your piece is now ready for the application of a protective wax coating. The wax used for this purpose is a clear microcrystalline paste wax. Gloves should be worn to avoid contaminating both your object and yourself. The wax coating can be applied to all of the parts. Only objects that have been properly cleaned and dried should be waxed.

Waxing Procedures:

Apply a small amount of paste wax to a clean stencil brush and wipe thinly over the pieces, being careful to get complete coverage. Do not apply too much- a **little** wax goes a long way.

Wait a minute or two and buff the wax out with a clean stencil or shoe buffing brushes. Wax has a plate-like structure, and buffing helps to align and compress it into a more continuous and protective coating. If you accidentally leave the unbuffed wax too long; simply apply a little more wax to soften the previous coat, then buff immediately.

To maintain the firearm, dust it periodically with a soft haké brush, checking each time for evidence of corrosion. Handle non-working weapons with gloves to prevent the development of fingerprint corrosion.

Storage:

Firearm storage areas should provide stable relative humidity and temperature. Because low relative humidity will harm the wooden stock and high humidity conditions will harm the iron alloy barrel and other metal parts, try to maintain stable relative humidity in the range of 35-45%. Maintaining cool temperatures, below 72°, will help slow the process of deterioration. If the storage area also doubles as an exhibit space, control both the visible and ultraviolet light, keeping visible light levels below 50 lux and ultraviolet light below 75 microwatts per lumen. Store small arms in acid free boxes cushioned with acid free tissue or soft polyethylene foam. Long arms may be stored in the same manner. If space issues require long arms to be stored vertically, minimize pressure on the wooden stocks by storing them with the barrels **down** on a surface padded with polyethylene foam. Avoid the use of wool or silk in storage or exhibit areas. These materials contain sulfur, which will accelerate corrosion, particularly to copper and silver alloy components. If soft covers are desired, create simple bags by sewing clean white cotton flannel with cotton thread. Avoid plastic covers, as their deterioration products may cause damage to the weapons. Keep the area locked at all times for safety and security.

If you have any concerns about the care of firearms, consult a conservator in your area for further guidance.

WARNING:

When working with solvents, be sure to follow all recommended safety precautions noted on the containers. Mineral spirits are strong, reactive solvents and their fumes can be harmful to your health when not used as instructed. **Always be aware of the location of the nearest fire extinguisher when working with flammable solvents and waxes.**

See the bibliography for references.

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